

CLAIMS

What is claimed is:

- 1           1.     An apparatus, comprising:
  - 2       (a)     a single die;
  - 3       (b)     a first circuitry disposed on said single die including:
    - 4           a deserializer for converting at least one serial differential bit
    - 5           stream into a character stream;
    - 6           a decoder receiving said character stream to form a decoded data
    - 7           stream; and
    - 8           a means for aggregating said decoded data stream and
    - 9           reconstructing a parallel word according to a desired protocol definition;
  - 10      (c)     a second circuitry disposed on said single die including:
    - 11           a means for presenting a second parallel word according to said
    - 12           desired protocol definition to form an altered data stream,
    - 13           an encoder receiving said altered data stream to form an encoded
    - 14           data stream;
    - 15           a serializer for converting said encoded data stream into said at
    - 16           least one serial differential bit stream, wherein said first circuitry and said
    - 17           second circuitry are capable of implementing at least two interconnect
    - 18           protocol definitions.
- 1           2.     The apparatus as claimed in claim 1, wherein said at least two
- 2     interconnect protocol definitions include a single-thread, multiple-speed protocol
- 3     method, a multiple-thread, single-speed protocol method, and a multiple-thread,
- 4     multiple-speed protocol method.
- 1           3.     The apparatus as claimed in claim 2, wherein at least two
- 2     interconnect protocol definitions include a 10 Gigabit Fibre Channel protocol
- 3     definition and a 4 Gigabit, 2 Gigabit, 1 Gigabit Fibre Channel protocol definition.

1           4.     A method, comprising:  
2     (a)     converting a at least one serial data stream to a character stream;  
3     (b)     decoding of said character stream to form a decoded data stream; and  
4     (c)     aggregating said decoded data stream according to a desired interconnect  
5           protocol definition;  
6     wherein circuitry disposed on a single die is capable of transforming at least one  
7     serial bit stream into a word in accordance with at least two interconnect protocol  
8     definitions.

1           5.     The method as claimed in claim 4, wherein said at least two  
2     interconnect protocol definitions include a single-thread, multiple-speed protocol  
3     method, a multiple-thread, single-speed protocol method and a multiple-thread,  
4     multiple-speed protocol method.

1           6.     The method as claimed in claim 5, wherein said at least two  
2     interconnect protocol definitions include a 10 Gigabit Fibre Channel protocol  
3     definition and a 4 Gigabit, 2 Gigabit, 1 Gigabit Fibre Channel protocol definition.

1           7.     The method as claimed in claim 6, wherein decoding of said at  
2     least one serial data streams converts 10 bits of data to 8 bits of data.

1           8.     The method as claimed in claim 6, wherein aggregating of said  
2     decoded data stream aligns said decoded data stream to reconstruct said parallel  
3     data word according to said desired interconnect protocol definition.

1           9.       A method, comprising:  
2       (a)     selecting a word stream for transmission;  
3       (b)     presenting said word stream according to a desired interconnect protocol  
4             definition to form an altered data stream;  
5       (c)     encoding said altered data stream to form an encoded data stream; and  
6       (d)     converting said encoded data stream to at least one serial differential bit  
7             stream; wherein circuitry disposed on a single die is capable of  
8             transforming said word stream into at least one serial differential bit  
9             stream in accordance with at least two interconnect protocol definitions.

1           10.     The method as claimed in claim 9, wherein said at least two  
2     interconnect protocol definitions include a single-thread, multiple-speed protocol  
3     method, a multiple-thread, single-speed protocol method, and a multiple-thread,  
4     multiple-speed protocol method.

1           11.     The method as claimed in claim 10, wherein said at least two  
2     interconnect protocol definitions are a 10 Gigabit Fibre Channel protocol  
3     definition and a 4 Gigabit, 2 Gigabit, 1 Gigabit Fibre Channel protocol definition.

1           12.     The method as claimed in claim 11, wherein encoding of said  
2     altered data stream converts 8 bits of data to 10 bits of data.

1           13.    An apparatus, comprising:  
2       (a)    a single die;  
3       (b)    means for transforming at least one serial differential bit stream into a  
4           parallel word; said transforming means being disposed on said single die;  
5       (c)    means for converting a second parallel word into at least one serial  
6           differential bit stream; said converting means being disposed on said  
7           single die; said converting means including an input selector in which said  
8           apparatus operates according to a selected protocol definition; wherein  
9           said transforming means and said converting means are capable of  
10          implementing at least two interconnect protocol definitions.

1           14.    The apparatus as claimed in claim 13, wherein said at least two  
2   interconnect protocol definitions include a single-thread, multiple-speed protocol  
3   method, a multiple-thread, single-speed protocol method and a multiple-thread,  
4   multiple-speed protocol method.

1           15.    The apparatus as claimed in claim 14, wherein at least two  
2   interconnect protocol definitions include a 10 Gigabit Fibre Channel protocol  
3   definition and a 4 Gigabit, 2 Gigabit, 1 Gigabit Fibre Channel protocol definition.

1           16.    The apparatus as claimed in claim 13, wherein said transforming  
2   means includes a deserializer, a decoder, and an aggregator capable of  
3   implementing at least two interconnect protocol definitions.

1           17.    The apparatus as claimed in claim 13, wherein said converting  
2   means includes a data presenter, an encoder, and a serializer capable of  
3   implementing at least two interconnect protocol definitions.